

**REMARKS/ARGUMENTS****Remarks Specifically Relating To This Replacement Amendment:**

This Replacement Amendment is based upon a prior Non-Final Amendment filed on September 30, 2005. The Notice of Non-Compliant Amendment mailed on October 7, 2005 indicated that Applicants had failed to include claim 31 within the listing of claims set forth in the prior Non-Final Amendment filed on September 30, 2005. It was the intention of the Applicants to cancel claim 31. Accordingly, within this Replacement Amendment, the listing of the claims shows claim 31 as being canceled.

The amendments to the specification set forth above presume that the amendments requested in the prior Non-Final Amendment filed on September 30, 2005 have not already been entered. Likewise, the listing of the claims in this Replacement Amendment presents such claims in a form that presumes that the amendments requested in the prior Non-Final Amendment filed on September 30, 2005 have not already been entered.

In reviewing the prior Non-Final Amendment filed on September 30, 2005, it was noted that a typographical error appeared in new claim 40; claim 40 earlier recited the step of "heating the Al<sub>2</sub>O<sub>3</sub> membrane and the first and second Al<sub>2</sub>O<sub>3</sub> housing plates to a temperature above 330 degrees Centigrade to sealingly join ...". The number "330" should have been "300". This typographical error has been corrected in the listing of claim 40 above.

New claim 49 was not previously included in the prior Non-Final Amendment filed on September 30, 2005. New claim 49 depends from claim 33 which, in turn, depends from claim 32. The total number of pending claims does not exceed twenty claims, so new fees are required.

Applicants would like to add a remark about new claims 40, 41, 42 and 43. Each of these

new claims recites a heating step for joining the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane with the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate. This heating step recites the use of a temperature “above 300 degrees Centigrade”. Applicants’ specification does not expressly recite the use of a temperature above “300 degrees Centigrade”. However, Applicants’ specification does expressly state that “the glass seals are baked at several 100°C. ...”. Those skilled in the art, and indeed, even those not skilled in the art, understand the word “several” to mean “more than two but fewer than many”. Thus, those skilled in the art would understand the phrase “the glass seals are baked at several 100°C. ...” to mean that the glass seals are heated to a temperature above 300 degrees Centigrade. As explained in Applicants’ specification, this heating/joining step can be practiced in a number of ways, including by soldering, welding, brazing, or diffusion bonding, the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate.

**Remarks Repeated From the Prior Non-Final Amendment Filed September 30, 2005:**

In response to the prior restriction requirement, Applicants have canceled withdrawn claims 19-23, 25, and 31, without prejudice to the presentation of such claims in a further divisional patent application. Applicants have added above new claims 39-49, each of which depends, directly or indirectly, from pending independent claim 32.

Within the Office Action, the Examiner objected to the drawings. In particular, the Examiner objected to Fig. 3 because it uses the reference numeral “6”, but the specification as filed did not make reference to item “6”. Applicants have amended the specification above to insert a description of item 6. The text that is being inserted to describe item “6” has been copied

directly from the specification of issued U.S. Patent No. 6,591,687, which patent issued upon prior-filed application Ser. No. 09/219,090, the parent application of the present divisional patent application. Moreover, dependent claim 11, and independent claim 24, both which were part of the original disclosure as filed, describe contacts to the electrically conductive layers being lead out through sealed feedthroughs (6) on the first housing body (1). On page 5 of the specification, it is mentioned that it is “advantageous to lead out the electrically conductive layers via feedthroughs that are arranged on the first housing body....”. On page 8 of the specification, the specification describes “drill holes for the electrical feedthrough of the electrode connections”. No new matter is being added to the initial disclosure, as the subject matter of such description was already indicated in Fig. 3 and described at other places within the specification.

The Examiner also objected to Fig. 4 of the patent drawings because the specification as filed did not describe Fig. 4. Applicants have amended the specification above to insert a description of Fig. 4. Once again, the text that is being inserted to describe Fig. 4 has been copied directly from the specification of issued U.S. Patent No. 6,591,687, which patent issued upon prior-filed application Ser. No. 09/219,090, the parent application of the present divisional patent application. In addition, the patent application specification as originally filed included claims 12 and 24, each of which describes a volume (13) formed in the first housing (1) connecting through an opening (14) to the reference vacuum chamber (25) under activation of a getter (10). No new matter is being added to the initial disclosure, as the subject matter of such description was already clearly shown in Fig. 4.

The amendment of Applicants’ specification overcomes the objections to the patent drawings raised by the Examiner.

Within the Office Action, the Examiner also objected to the form of independent

claim 32 as lacking the word “and” at the end of sub-paragraph h). Applicants have amended claim 32 to overcome this objection.

The Examiner has imposed a double-patenting rejection, under 35 U.S.C. §101, against claims 33, 34 (dependent on claim 33), and 36 (dependent on claim 34) in view of claim 1 of prior U.S. Patent No. 6,528,008. The Examiner states in the Office Action that “claim 33 is drawn to the identical subject matter” as claim 1 of the ‘008 patent. However, this is incorrect. Claim 33 depends from independent claim 32 and necessarily includes the limitations recited in claim 32. Among the limitations recited in parent claim 32 are: 1) manufacturing a first  $\text{Al}_2\text{O}_3$  housing plate; 2) forming an electrically conductive surface on the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate; 3) manufacturing a second  $\text{Al}_2\text{O}_3$  housing plate; 4) forming an opening in the second  $\text{Al}_2\text{O}_3$  housing plate; 5) sealing a connecting port about the opening formed in the second  $\text{Al}_2\text{O}_3$  housing plate; 6) forming an electrically conductive film on the first surface of the  $\text{Al}_2\text{O}_3$  membrane; 7) disposing the  $\text{Al}_2\text{O}_3$  membrane between the inner surface of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate; and 8) sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates. None of these steps even remotely appear in claim 1 of the ‘008 patent. Thus, claim 33 of the present application has a significantly different scope than that of claim 1 of the ‘008 patent, and in no sense can the two claims be considered as being drawn to “identical subject matter”. The statutory double patenting rejection under 35 U.S.C. §101 can not be supported, and should be withdrawn.

Independent claim 32, and dependent claim 26, were rejected within the Office Action under 35 U.S.C. §102(b) as describing subject matter considered by the Examiner to be identically disclosed by the measuring cell shown in Fig. 1 of the patent drawings of the present

application; Applicants concede that the structure shown in Fig. 1 of the present application is “prior art”. Claim 32 has been amended to recite that the claimed method includes the step of manufacturing an  $\text{Al}_2\text{O}_3$  membrane ... having a thickness within the range of 10  $\mu\text{m}$  to 250  $\mu\text{m}$ ; in contrast, Applicants description of the relevant art (see page 2 of the specification) states that ceramic membranes used in the past have had thicknesses ranging from 279  $\mu\text{m}$  to 2540  $\mu\text{m}$ . Moreover, Applicants’ specification notes that membranes in such range are not suitable for measuring relatively low pressures (i.e., .1 mbar and lower). Accordingly, the prior art structure of Fig. 1 does not identically disclose the subject matter recited by claim 1 as amended.

The Examiner also rejected claims 26, 32 and 35 within the Office Action under 35 U.S.C. §102(b) as describing subject matter considered by the Examiner to be identically disclosed by the measuring cell shown in published United Kingdom patent application GB 2 124 770 (Tack). As noted above, claim 32 of the present application has been amended to recite that the claimed method includes the step of manufacturing an  $\text{Al}_2\text{O}_3$  membrane ... having a thickness within the range of 10  $\mu\text{m}$  to 250  $\mu\text{m}$ . Tack does not disclose any absolute membrane thicknesses; Tack merely states that when “the diaphragm thickness is at its lower limit, the sensitivity is greatest.” - see Tack specification, page 1, lines 123-124. Tack fails to disclose or suggest a method of bringing the diaphragm thickness “lower limit” down to a point wherein the resulting structure can be used to measure pressures of 0.1 mbar or less. Accordingly, Tack does not identically disclose the subject matter recited in pending claim 32.

Newly added claims 39-49 all depend from claim 32, and incorporate additional features that further distinguish Applicants’ invention from the cited art. New claim 39 depends from claim 32 and recites that the step of sealing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates includes the application of a glass

paste to the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane; disposing the  $\text{Al}_2\text{O}_3$  membrane between the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates; and heating the  $\text{Al}_2\text{O}_3$  membrane and the first and second  $\text{Al}_2\text{O}_3$  housing plates to sealingly join the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates. In contrast, Applicants' description of prior art Fig. 1 identifies a fusible seal (21) and an elastomer seal (27) to seal components to each other, while Tack suggests the adhesive cyanoacrylate (see page 1, lines 82-84).

New claims 40-43 recite alternate ways to seal the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates, including 1) applying solder to the joint, and heating the  $\text{Al}_2\text{O}_3$  membrane and the first and second  $\text{Al}_2\text{O}_3$  housing plates to a temperature above 300 degrees Centigrade (see claim 40); 2) welding the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates at a welding temperature above 300 degrees Centigrade; 3) brazing the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first  $\text{Al}_2\text{O}_3$  housing plate and the second  $\text{Al}_2\text{O}_3$  housing plate with a corrosion resistant brazing material at a temperature above 300 degrees Centigrade (claim 42); and diffusion bonding the outer periphery of the  $\text{Al}_2\text{O}_3$  membrane to the outer peripheries of the first and second  $\text{Al}_2\text{O}_3$  housing plates at a temperature above 300 degrees Centigrade (claim 43). None of these methods are suggested by the art relied upon by the Examiner.

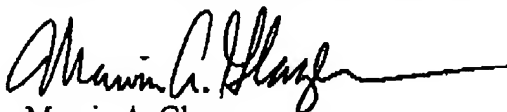
Claim 44 narrows the membrane thickness range to 10  $\mu\text{m}$  to 120  $\mu\text{m}$ . Claim 45 recites that the membrane has a diameter within the range of 5 mm to 80 mm, while claim 46 narrows such range of membrane diameters to the range of 5 mm to 40 mm. Claim 47 recites that the membrane material has a grain size less than 20  $\mu\text{m}$ , while claim 48 further narrows the range of

membrane material grain size to less than 10  $\mu\text{m}$ . New claim 49 further recites that the smoothing step of claim 33 includes pressing the membrane between two flat plates. None of such features is taught, suggested, or enabled by any of the art relied upon by the Examiner.

For the foregoing reasons, Applicants respectfully submit that the present application is now in condition for allowance, which action is earnestly requested.

Respectfully submitted,

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